Review on Applications Areas of Smart Cities

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Abstract - *Cities are the main poles of human and economic activity. They have great potential to create opportunities to their inhabitants. However, they also generate a wide range of problems that can be difficult to tackle as they grow in size and complexity. Urban areas need to change to enhance their quality of living and also to consider environment sustainability. For this purpose new concept that is "Smart City" is evolved. Use of smart cities it makes infrastructure more interactive, accessible and efficient. Need of smart cities arise due to some reasons mainly population is growing rapidly. Second one is due to depleting of natural resources rapidly. Next reason is environment is changing day by day. Smart city is the same as a digital city, and it can be called as sustainable city. All human activities take place in cities, are all can be included within the smart city concept.*

Key Words: **Smart City, Sensor, Smart Home, Smart Vehicle, IOT**

1. INTRODUCTION

A smart city can be described as a city that permit real-world urban data to be collected and analyzed by the use of software systems, server substructure, network infrastructure, and client devices. It applies solutions, with the support of instrumentation and interconnection of sensors, actuators, and mobile devices. It can also produce information intelligently to analyze between the municipality and the urban or business community. Smart cities use different kind of information and ICT structures.

Applications includes smart infrastructure, smart operation, smart health smart service and smart industry, smart education systems, or smart security systems, smart home. Cities are now changing from digital cities to smart cities, digital or intelligent cities that are uses more technology oriented services of smart city. We can call a city "smart" when it is well equipped with instruments, interconnected, adaptive, autonomous, learning, self-repairing, and robust. Infrastructure parts are interconnected and facilities are digitally connected and they are optimized by using ICT to deliver services to their citizens and other.

2. APPLICATION AREAS OF SMART CITIES

- Smart Economy
- Smart Governance
- Smart Mobility
- Smart Environment
- Smart Home
- Smart people
- Smart Living

2.1 SMART ECONOMY

Fig 1.Smart Economy

Smart economy is nothing but Innovative ideas that increase the productivity and reduce cost. It is digitally widespread use of ICTs in the economy. It is open to all that can apply knowledge and innovation to obtain good quality with higher profits, productive resources and efficient with good cost. Smart economy uses natural energy resources to focus on sustainable fundamentals.

2.2 SMART GOVERNANCE

Fig 2.Smart Governance

Smart cities project includes multiple stakeholders. For good management of those projects and initiatives, cities must improve or adapt the governance quality. Smart Governance includes a collection of technologies, people, policies, practices, resources, social norms and information that interact to support city governing activities. It improves information systems and communication networks and use of innovative policies, technology and business models. The e-governance projects success depends on stakeholders

relations. These issues are the ability to cooperate among stakeholders, support of leadership, structure of alliances and working under different jurisdictions.

2.3 SMART LIVING

Fig 3.Smart Living

Scientists are developing day by day an intelligent ways of living through technology. All devices being used are connected with each other so a lot of tasks become easier, safer and cheaper. These years, innovative solutions made life of individuals more productive, sustainable and efficient. For example, the smart building has achieved interest and Connecting Building Systems a part of modern building which are equipped with components and technological devices which   collect all information intelligently .Due to this it has improved the productivity, safety and comfort of residents. A building manager uses standard automation to gather data, analyze, monitor and manage the building respect the IoT paradigm

2.4 SMART MOBILITY

Fig 4.Smart Mobility

Evolution of metropolitan cities results in a change of lifestyles and mobility practices: the individuals move by using lots of modes like individual transportation, public transportation etc. for reasons more and more diversified.

Due to these traffic problems arises such as congestions and delays. Urban Traffic Control (UTC) and Traffic Management Systems (TMS) have experienced enormous changes throughout the years. By the increasing of population growth and automobiles sectors, traffic control systems in city infrastructure must plan strategies to decrease problems for mobility future requirements. These systems (TMS) should preserve their original purpose of optimizing throughput and guarantee of quality of service, the concept such as ICTs and the Internet of Things (IoT) are now explored.

The development of the citiess scales and patterns used in transportation caused problems that affect on the well being of citizens in urban areas. Most of research in this area conclude that the use of private cars still the transportation mode dominated in cities. Yet, the automobile city is the solution that fills citizens needs of privacy, independence, freedom, flexibility, etc. On the other hand, this mode of transportation has big effect on a citys future, the large energy consumed by cars which produce noise and air pollution producing climate

Most of research says that the use of private cars still the transportation mode cities is going on due to citizens needs privacy, independence, freedom, flexibility, etc. By using this mode of transportation problem may arise in future which can affect environment as well as large energy consumption by cars which produce noise and air pollution as well. To avoid this problem, there is need to consider real-time condition and the short-term traffic prediction in TMS.

2.5 SMART ENVIRONMENT

Smart environments include Agriculture, Smart energy, Pollution monitoring, Disaster management, Waste disposal, green construction etc. Depending upon application sensors and actuators are embedded within building are devices that reacts automatically to the users within that environment. The sensors are not visible to the user so they become part of the environment. Sensors are not required to monitor explicitly by users because it interact with the devices implicitly. Examples of sensors are thermometers, cameras, microphones, motion sensors, or any other device that can

provide information to an automated control system regarding the state of the environment. Actuators are used to alter the condition. Examples of actuators are a furnace or air conditioner to control the temperature, the lights or curtains within a room to control the lighting, etc.

3. IOT CHALLENGES IN SMART CITIES

1. Security and Privacy-

2. Heterogeneity

3. Reliability

4. Legal and Social aspects

5. Big data

4. CONCLUSION

There are huge amount of applications are available in smart cities. Smart Home and smart cities can be collectively using IOT assures to deliver change in individuals" quality of life and enterprises" productivity. Using such smart things in our day to day life we can improve economic development of our nation and standard of living of citizens. It also save money and reduce pollution.

IOT can be used to extend and enhance a widely distributed, locally intelligent network of smart devices, to provide basic and important services in transportation, logistics, security, utilities, education, healthcare and other areas. A continuous efforts and capabilities are required to deploy such devices in initial stages using IOT. Though there is certain limitation while implementing smart cities, as large number of stakeholders is included and everybody has their own opinion. As this is new concept, it requires proper business to be developed and should be implemented.

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